PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF THE RECORDING OF A CHANGE

(PCT Rule 92bis.1 and Administrative Instructions, Section 422)

To:

SCHAEFFER, Andrew, L.
E.I. du Pont de Nemours and Company
Legal Patent Records Center
1007 Market Street
Wilmington, DE 19898
ETATS-UNIS D'AMERIQUE

Date of mailing (day/month/year)
08 September 2000 (08.09.00)

Applicant's or agent's file reference
BB1316PCT

IMPORTANT NOTIFICATION

International application No.
PCT/US99/29825

International filing date (day/month/year)
15 December 1999 (15.12.99)

1. The following indications appeared on record concerning:

[ ] the applicant [ ] the inventor [X] the agent [ ] the common representative

Name and Address

FEULNER, Gregory, J.
E.I. du Pont de Nemours and Company
Legal Patent Records Center
1007 Market Street
Wilmington, DE 19898
United States of America

State of Nationality:
State of Residence:
Telephone No.: 302-992-3749
Facsimile No.: 302-773-0164
Teleprinter No.:

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

[X] the person [ ] the name [ ] the address [ ] the nationality [ ] the residence

Name and Address

SCHAEFFER, Andrew, L.
E.I. du Pont de Nemours and Company
Legal Patent Records Center
1007 Market Street
Wilmington, DE 19898
United States of America

State of Nationality:
State of Residence:
Telephone No.: 302-992-4926
Facsimile No.: 302-773-0164
Teleprinter No.:

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

[X] the receiving Office
[ ] the International Searching Authority
[X] the International Preliminary Examining Authority
[ ] the designated Offices concerned
[X] the elected Offices concerned
[ ] other:

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer
C. Cupello

Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

Assistant Commissioner for Patents
United States Patent and Trademark Office
Box PCT
Washington, D.C.20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 08 September 2000 (08.09.00)	
International application No. PCT/US99/29825	**Applicant's or agent's file reference** BB1316PCT
International filing date (day/month/year) 15 December 1999 (15.12.99)	**Priority date** (day/month/year) 16 December 1998 (16.12.98)
Applicant ALLEN, Stephen, M. et al	

1. The designated Office is hereby notified of its election made:

[X] in the demand filed with the International Preliminary Examining Authority on:

10 July 2000 (10.07.00)

[ ] in a notice effecting later election filed with the International Bureau on:

2. The election [X] was

[ ] was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

C. Cupello

Telephone No.: (41-22) 338.83.38

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 99/29825

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C12N15/54 C12N9/12 C07K14/415 C12N5/10 C12Q1/68
C12Q1/48

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C12N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	OSBORNE ET AL.: "Hypothetical 43.0 kD protein" EMBL SEQUENCE DATABASE, 1 July 1997 (1997-07-01), XP002137117 HEIDELBERG DE Ac 004028 the whole document	1,10,24

-/--

[X] Further documents are listed in the continuation of box C.

[ ] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
22 May 2000	13/06/2000

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Ceder, O

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

SCHAEFFER Andrew L.
E.I. DU PONT DE NEMOURS AND COMPANY
Legal/Patent Records Center
1007 Market Street
Wilmington, Delaware 19898
ETATS-UNIS D'AMERIQUE

TMR

RECEIVED
MAR 16 2001
PATENT RECORDS CENTER

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing *(day/month/year)*	12.03.2001
Applicant's or agent's file reference: BB1316PCT	**IMPORTANT NOTIFICATION**

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US99/29825	15/12/1999	16/12/1998

Applicant
E.I. DU PONT DE NEMOURS AND COMPANY et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.

2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.

3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/	Authorized officer
European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Guerin, A REY NOTED T l.+49 89 2399-8061

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
BB1316PCT		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US99/29825	15/12/1999	16/12/1998
International Patent Classification (IPC) or national classification and IPC C12N15/54		
Applicant E.I. DU PONT DE NEMOURS AND COMPANY et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations suporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☒ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
10/07/2000	12.03.2001
Nam and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Novak, S Telephone No. +49 89 2399 8930

Form PCT/IPEA/409 (cover sheet) (January 1994)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/US99/29825

I. Basis f th report

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments (Rules 70.16 and 70.17).)*:
Description, pages:

1-25	as originally filed				
Claims, No.:					
1-12	as originally filed				
13-24.	as received on	10/03/2000	with letter of	06/03/2000	

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   - ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
   - ☐ the language of publication of the international application (under Rule 48.3(b)).
   - ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   - ☐ contained in the international application in written form.
   - ☐ filed together with the international application in computer readable form.
   - ☐ furnished subsequently to this Authority in written form.
   - ☐ furnished subsequently to this Authority in computer readable form.
   - ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
   - ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

   - ☐ the description, pages:
   - ☐ the claims, Nos.:
   - ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

   (Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-24
	No:	Claims	
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-24
Industrial applicability (IA)	Yes:	Claims	1-24
	No:	Claims	

2. Citations and explanations
   see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

Reference is made to the following documents:

D1: OSBORNE ET AL.: 'Hypothetical 43.0 kD protein' EMBL SEQUENCE DATABASE, 1 July 1997 (1997-07-01), XP002137117 HEIDELBERG DE

D2: CELENZA ET AL.: 'Molecular analysis of the SNF4 gene ....' EMBL SEQUENCE DATABASE, June 1989 (1989-06), XP002137118 HEIDELBERG DE -& CELENZA ET AL.: 'Molecular analysis of the SNF4 gene ....' MOL CELL BIOL, vol. 9, no. 11, 1989, pages 5045-5054, XP000910655 cited in the application

D3: HOTTA ET AL.: 'Molecular analysis of a novel protein kinase in maturing rice seed' GENE, vol. 213, 15 June 1998 (1998-06-15), pages 47-54, XP004125002

ad V.

1. Novelty (Article 33(2) PCT)

1.1. The subject-matter of claims 1 - 24 is drawn to nucleic acid fragments encoding proteins involved in glucose repression in plants. Also encompassed are host cells comprising such nucleic acids, methods using said fragments, and compositions comprising these nucleic acids.

1.2. D1 displays the amino acid sequence of the SNF4 gene from *Arabidopsis thaliana*. Amino acid alignments of this sequence with various sequences (namely SEQ ID NOs 2, 4, 6, 8, 10, 12, 14, 18, 20, and 22) of the present application show between 24% - 71% identity in up to 389 aa overlaps.
It follows that novelty can not be acknowledged for the subject-matter of claim 24, which deals with nucleotide sequences encoding a polypeptide of at least 50 amino acids that has at least 60% amino acid identity.
The subject-matter of claims 1 - 24 however, is not known from the prior art documents and thus considered to fulfill the requirements of Article 33(2) PCT.

2. Inventive Step (Article 33(3) PCT)

2.1. D1 is considered to represent the closest prior art.

D2 is another document dealing with SNF4 proteins. This document describes the cloning, and molecular analysis of SNF4 from *Saccharomyces cerevisiae*. It is mentioned that SNF4 is required for the expression of glucose-repressible genes in response to glucose deprivation. Its functional relation to SNF1, encoding a protein kinase involved in this regulatory system is discussed, and evidence is shown that these two proteins are physically associated.

2.2. Claimed SNF4 nucleic acid fragments are distinguished from the nucleic acids and proteins of D1 and/or D2 in that they derive from a different (plant) species.

2.3. The problem to be solved can therefore be regarded as providing additional SNF4 nucleic acids/proteins fragments.

2.4. This solution can not be regarded as involving an inventive step, since providing further SNF4 nucleic acid fragments and proteins is regarded as pure homology cloning.
Homology cloning of nucleotide sequences comes within the scope of the customary practice followed by persons skilled in the art, especially as the advantages thus achieved can readily be foreseen.
The sequence from D1 - which is derived from plants as well - displays high homology to the claimed sequences. From D2 it is known that the SNF4 genes are involved in the carbon catabolite regulation complex, an important global regulatory system in response to glucose availability, thus rendering the motivation to look for additional homologous genes in further plants.

Consequently, the subject-matter of claims 1 - 8 lacks an inventive step.

The same applies to claims 9 - 24 which are concerned with methods to bring claimed polynucleotides into practice, respectively compositions containing said fragments.
Such applications are regarded merely as one of several straightforward possibilities from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill, in order to solve the problem posed.

Therefore, no inventive step will be acknowledged for the subject-matter of claims 9 - 24.

ad VIII.

3. Clarity (Article 6 PCT)

3.1. Claim 11 is not supported by the description as required by Article 6 PCT, as its scope is broader than justified by the description and drawings. The reasons therefor are the following:
It is neither mentioned in the description nor is there an exemplified embodiment that would justify the use of "..a nucleotide sequence of at least one of 30 contiguous nucleotides.." in the claimed method. Moreover, it is not clear how the use of such a short stretch of nucleotides could ever result in achieving the claimed result, i. e. a method of selecting an isolated polynucleotide.

13. A method of selecting an isolated polynucleotide that affects the level of expression of a protein involved in catabolite repression in a plant cell, the method comprising the steps of:

(a) constructing an isolated polynucleotide of Claim 1;

(b) introducing the isolated polynucleotide into a plant cell; and

(c) measuring the level of polypeptide in the plant cell containing the polynucleotide to provide a positive selection means.

14. A method of obtaining a nucleic acid fragment encoding a protein involved in catabolite repression comprising the steps of:

(a) synthesizing an oligonucleotide primer comprising a nucleotide sequence of at least one of 30 contiguous nucleotides derived from a nucleotide sequence selected from the group consisting of SEQ ID NOs:1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, and the complement of such nucleotide sequences; and

(b) amplifying a nucleic acid sequence using the oligonucleotide primer.

15. A method of obtaining a nucleic acid fragment encoding a protein involved in catabolite repression comprising the steps of:

(a) probing a cDNA or genomic library with an isolated polynucleotide comprising at least one of 30 contiguous nucleotides derived from a nucleotide sequence selected from the group consisting of SEQ ID NOs:1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, and the complement of such nucleotide sequences;

(b) identifying a DNA clone that hybridizes with the isolated polynucleotide;

(c) isolating the identified DNA clone; and

(d) sequencing the cDNA or genomic fragment that comprises the isolated DNA clone.

16. A composition comprising the isolated polynucleotide of Claim 1.

17. A composition comprising the isolated polypeptide of Claim 10.

18. An isolated polynucleotide comprising the nucleotide sequence having at least one of 30 contiguous nucleotides derived from a nucleic acid sequence selected from the group consisting of SEQ ID NOs:1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, and the complement of such sequences.

19. An expression cassette comprising an isolated polynucleotide of Claim 1 operably linked to a promoter.

20. A method for positive selection of a transformed cell comprising:

(a) transforming a host cell with the chimeric gene of Claim 5 or an expression cassette of Claim 19; and

(b) growing the transformed host cell under conditions which allow expression of the polynucleotide in an amount sufficient to complement a null mutant and alter catabolite repression pathways to provide a positive selection means.

21. The method of Claim 20 wherein the host cell is a plant cell.

22. The method of Claim 21 wherein the plant cell is a dicot or a monocot.

23. An isolated polynucleotide comprising a first nucleotide sequence encoding a polypeptide of at least 58 amino acids that has at least 80% identity based on the Clustal method of alignment when compared to a polypeptide selected from the group consisting of SEQ ID NOs:16, 18, 20 and 22, or a second nucleotide sequence comprising the complement of the first nucleotide sequence.

24. An isolated polynucleotide comprising a first nucleotide sequence encoding a polypeptide of at least 50 amino acids that has at least 60% identity based on the Clustal method of alignment when compared to a polypeptide selected from the group consisting of SEQ ID NOs:2, 4, 6, 8, 10, 12, 14, 16, 18, 20, and 22, or a second nucleotide sequence comprising the complement of the first nucleotide sequence.

14

TENT COOPERATION TR[illegible]TY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
BB1316PCT		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US99/29825	15/12/1999	16/12/1998
International Patent Classification (IPC) or national classification and IPC C12N15/54		
Applicant E.I. DU PONT DE NEMOURS AND COMPANY et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations suporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☒ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
10/07/2000	12.03.2001
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Novak, S Telephone No. +49 89 2399 8930

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/US99/29825

I. Basis of the report

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments (Rules 70.16 and 70.17).)*:
Description, pages:

1-25	as originally filed				

Claims, No.:

1-12	as originally filed				
13-24	as received on	10/03/2000	with letter of	06/03/2000	

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   - ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
   - ☐ the language of publication of the international application (under Rule 48.3(b)).
   - ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   - ☐ contained in the international application in written form.
   - ☐ filed together with the international application in computer readable form.
   - ☐ furnished subsequently to this Authority in written form.
   - ☐ furnished subsequently to this Authority in computer readable form.
   - ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
   - ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

   - ☐ the description, pages:
   - ☐ the claims, Nos.:
   - ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

   (Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-24
	No:	Claims	
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-24
Industrial applicability (IA)	Yes:	Claims	1-24
	No:	Claims	

2. Citations and explanations
   see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

Reference is made to the following documents:

D1: OSBORNE ET AL.: 'Hypothetical 43.0 kD protein' EMBL SEQUENCE DATABASE, 1 July 1997 (1997-07-01), XP002137117 HEIDELBERG DE

D2: CELENZA ET AL.: 'Molecular analysis of the SNF4 gene ....' EMBL SEQUENCE DATABASE, June 1989 (1989-06), XP002137118 HEIDELBERG DE -& CELENZA ET AL.: 'Molecular analysis of the SNF4 gene ....' MOL CELL BIOL, vol. 9, no. 11, 1989, pages 5045-5054, XP000910655 cited in the application

D3: HOTTA ET AL.: 'Molecular analysis of a novel protein kinase in maturing rice seed' GENE, vol. 213, 15 June 1998 (1998-06-15), pages 47-54, XP004125002

ad V.

1. Novelty (Article 33(2) PCT)

1.1. The subject-matter of claims 1 - 24 is drawn to nucleic acid fragments encoding proteins involved in glucose repression in plants. Also encompassed are host cells comprising such nucleic acids, methods using said fragments, and compositions comprising these nucleic acids.

1.2. D1 displays the amino acid sequence of the SNF4 gene from *Arabidopsis thaliana*. Amino acid alignments of this sequence with various sequences (namely SEQ ID NOs 2, 4, 6, 8, 10, 12, 14, 18, 20, and 22) of the present application show between 24% - 71% identity in up to 389 aa overlaps.
It follows that novelty can not be acknowledged for the subject-matter of claim 24, which deals with nucleotide sequences encoding a polypeptide of at least 50 amino acids that has at least 60% amino acid identity.
The subject-matter of claims 1 - 24 however, is not known from the prior art documents and thus considered to fulfill the requirements of Article 33(2) PCT.

2. Inventive Step (Article 33(3) PCT)

2.1. D1 is considered to represent the closest prior art.

D2 is another document dealing with SNF4 proteins. This document describes the cloning, and molecular analysis of SNF4 from *Saccharomyces cerevisiae*.
It is mentioned that SNF4 is required for the expression of glucose-repressible genes in response to glucose deprivation. Its functional relation to SNF1, encoding a protein kinase involved in this regulatory system is discussed, and evidence is shown that these two proteins are physically associated.

2.2. Claimed SNF4 nucleic acid fragments are distinguished from the nucleic acids and proteins of D1 and/or D2 in that they derive from a different (plant) species.

2.3. The problem to be solved can therefore be regarded as providing additional SNF4 nucleic acids/proteins fragments.

2.4. This solution can not be regarded as involving an inventive step, since providing further SNF4 nucleic acid fragments and proteins is regarded as pure homology cloning.
Homology cloning of nucleotide sequences comes within the scope of the customary practice followed by persons skilled in the art, especially as the advantages thus achieved can readily be foreseen.
The sequence from D1 - which is derived from plants as well - displays high homology to the claimed sequences. From D2 it is known that the SNF4 genes are involved in the carbon catabolite regulation complex, an important global regulatory system in response to glucose availability, thus rendering the motivation to look for additional homologous genes in further plants.

Consequently, the subject-matter of claims 1 - 8 lacks an inventive step.

The same applies to claims 9 - 24 which are concerned with methods to bring claimed polynucleotides into practice, respectively compositions containing said fragments.
Such applications are regarded merely as one of several straightforward possibilities from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill, in order to solve the problem posed.

Therefore, no inventive step will be acknowledged for the subject-matter of claims 9 - 24.

ad VIII.

3. Clarity (Article 6 PCT)

3.1. Claim 11 is not supported by the description as required by Article 6 PCT, as its scope is broader than justified by the description and drawings. The reasons therefor are the following:
It is neither mentioned in the description nor is there an exemplified embodiment that would justify the use of "..a nucleotide sequence of at least one of 30 contiguous nucleotides.." in the claimed method. Moreover, it is not clear how the use of such a short stretch of nucleotides could ever result in achieving the claimed result, i. e. a method of selecting an isolated polynucleotide.

13. A method of selecting an isolated polynucleotide that affects the level of expression of a protein involved in catabolite repression in a plant cell, the method comprising the steps of:

(a) constructing an isolated polynucleotide of Claim 1;

(b) introducing the isolated polynucleotide into a plant cell; and

(c) measuring the level of polypeptide in the plant cell containing the polynucleotide to provide a positive selection means.

14. A method of obtaining a nucleic acid fragment encoding a protein involved in catabolite repression comprising the steps of:

(a) synthesizing an oligonucleotide primer comprising a nucleotide sequence of at least one of 30 contiguous nucleotides derived from a nucleotide sequence selected from the group consisting of SEQ ID NOs:1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, and the complement of such nucleotide sequences; and

(b) amplifying a nucleic acid sequence using the oligonucleotide primer.

15. A method of obtaining a nucleic acid fragment encoding a protein involved in catabolite repression comprising the steps of:

(a) probing a cDNA or genomic library with an isolated polynucleotide comprising at least one of 30 contiguous nucleotides derived from a nucleotide sequence selected from the group consisting of SEQ ID NOs:1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, and the complement of such nucleotide sequences;

(b) identifying a DNA clone that hybridizes with the isolated polynucleotide;

(c) isolating the identified DNA clone; and

(d) sequencing the cDNA or genomic fragment that comprises the isolated DNA clone.

16. A composition comprising the isolated polynucleotide of Claim 1.

17. A composition comprising the isolated polypeptide of Claim 10.

18. An isolated polynucleotide comprising the nucleotide sequence having at least one of 30 contiguous nucleotides derived from a nucleic acid sequence selected from the group consisting of SEQ ID NOs:1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, and the complement of such sequences.

19. An expression cassette comprising an isolated polynucleotide of Claim 1 operably linked to a promoter.

20. A method for positive selection of a transformed cell comprising:

(a) transforming a host cell with the chimeric gene of Claim 5 or an expression cassette of Claim 19; and

(b) growing the transformed host cell under conditions which allow expression of the polynucleotide in an amount sufficient to complement a null mutant and alter catabolite repression pathways to provide a positive selection means.

21. The method of Claim 20 wherein the host cell is a plant cell.

22. The method of Claim 21 wherein the plant cell is a dicot or a monocot.

23. An isolated polynucleotide comprising a first nucleotide sequence encoding a polypeptide of at least 58 amino acids that has at least 80% identity based on the Clustal method of alignment when compared to a polypeptide selected from the group consisting of SEQ ID NOs:16, 18, 20 and 22, or a second nucleotide sequence comprising the complement of the first nucleotide sequence.

24. An isolated polynucleotide comprising a first nucleotide sequence encoding a polypeptide of at least 50 amino acids that has at least 60% identity based on the Clustal method of alignment when compared to a polypeptide selected from the group consisting of SEQ ID NOs:2, 4, 6, 8, 10, 12, 14, 16, 18, 20, and 22, or a second nucleotide sequence comprising the complement of the first nucleotide sequence.

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
A	CELENZA ET AL.: "Molecular analysis of the SNF4 gene ...." EMBL SEQUENCE DATABASE, June 1989 (1989-06), XP002137118 HEIDELBERG DE Ac RGBYC3 the whole document	1,10,24
A	-& CELENZA ET AL.: "Molecular analysis of the SNF4 gene ...." MOL CELL BIOL, vol. 9, no. 11, 1989, pages 5045-5054, XP000910655 cited in the application abstract	1,10,24
A	HOTTA ET AL.: "Molecular analysis of a novel protein kinase in maturing rice seed" GENE, vol. 213, 15 June 1998 (1998-06-15), pages 47-54, XP004125002 abstract	5,14,15, 20